

AMENDMENTS TO THE CLAIMS

1. (Currently amended): An imager device, comprising:

an array of pixels; and

a first circuit electrically coupled to at least one pixel of said array, said first circuit being adapted to output ~~outputs~~ a digital representation of an analog pixel signal based on a difference between a reference signal current and pixel signal current.

2. (Currently amended): The imager device of claim 1, wherein said first circuit comprises:

a second circuit having a first resistance through which the reference signal current flows;

a third circuit having a second resistance through which the pixel signal current flows;
and

an analog-to-digital converter coupled to said second and third circuits, said analog-to-digital converter being adapted to modify ~~modifies~~ the first resistance based on the difference between the reference signal current and the pixel signal current, wherein said digital representation corresponds to an output of the analog-to-digital converter used to modify the first resistance.

3. (Original): The imager device of claim 2, wherein said analog-to-digital converter modifies the first resistance when the reference signal current does not equal the pixel signal current.

4. (Original): The imager device of claim 2 wherein said analog-to-digital converter comprises:

a first switch connected to the first resistance; and

a comparator for controlling said first switch with a control signal such that the first resistance may be modified and for outputting the control signal as the digital representation.

5. (Currently amended): The imager device of claim 1, wherein said first circuit comprises:

a second circuit having a first switch coupled to a first switchable resistance through which the reference signal current flows, said first switchable resistance being controlled by clock signals operating at a first frequency, said first switch being controlled by a control signal;

a third circuit having a second switchable resistance through which the pixel signal current flows, said second switchable resistance being controlled by clock signals operating at the first frequency; and

an analog-to-digital converter coupled to said second and third circuits, said analog-to-digital converter being adapted to modify ~~modifies~~ the first resistance based on the difference between the reference signal current and the pixel signal current by outputting the control signal, said digital representation corresponding to the control signal.

6. (Canceled)

7. (Original): The imager device of claim 5, wherein a duty cycle of the control signal corresponds to a level of brightness of the pixel signal.

8. (Canceled)

9. (Original): The imager device of claim 5, wherein said analog-to-digital converter comprises:

a first switch connected to the first switchable resistance; and

a comparator controlling said first switch with the control signal such that the first resistance may be modified and outputting the control signal as the digital representation.

10. (Original): The imager device of claim 1 further comprising a counter for counting said digital representation to obtain a multi-bit digital code representative of the analog pixel signal.

11. (Canceled)

12. (Currently amended): The imager device of claim 10 further comprising:

a hold register for holding the multi-bit digital code while said first circuit outputs a second digital representation of another analog pixel signal;

a decoder connected to said hold register for outputting the multi-bit digital code; and

a current mirror for mirroring the reference signal current to the third circuit.

13. (Canceled)

14. (Canceled)

15. (Canceled)

16. (Original): An imager device comprising:

an array of pixels;

a first circuit coupled to a pixel of said array, said first circuit converting an analog reference signal voltage into a reference current;

a second circuit coupled to the pixel, said second circuit converting an analog pixel signal voltage into a pixel current; and

an analog-to-digital converter coupled to said first and second circuits, said analog-to-digital converter outputting a digital value corresponding to the analog pixel signal voltage based on a difference of said currents.

17. (Original): The imager device of claim 16 wherein said analog-to-digital converter modifies a resistance of said first circuit when the reference current does not equal the pixel current.

18. (Original): The imager device of claim 17 wherein said analog-to-digital converter comprises:

a first switch connected to the first resistance; and

a comparator for controlling said first switch with a control signal such that the first resistance is modified and for outputting the control signal as the digital representation.

19. (Canceled)

20. (Canceled)

21. (Original): The imager device of claim 16 further comprising a counter for counting said digital value to obtain a multi-bit digital code representative of the analog pixel signal.

22. (Canceled)

23. (Original): The imager device of claim 21 further comprising a hold register for holding the multi-bit digital code while said analog-to-digital converter outputs a second digital value for another analog pixel signal.

24. (Original): The imager device of claim 23 further comprising a decoder connected to said hold register for outputting the multi-bit digital code.

Claims 25-41 (Canceled)

42. (Original): A method of operating an imager, said method comprising the steps of:

converting a reference signal voltage into a first current;

converting a pixel signal voltage into a second current; and

outputting a digital code representative of the pixel signal based on a difference of the first and second currents.

43. (Original): The method of claim 42, wherein said step of converting the reference signal voltage comprises:

inputting the reference signal voltage; and

applying the reference signal voltage across a switchable resistance resistor.

44. (Original): The method of claim 43, wherein said step of converting the pixel signal voltage comprises:

inputting the pixel signal voltage; and

applying the pixel signal voltage across a switchable resistance resistor.

45. (Currently amended): The method of claim 43, further comprising the step of adjusting the resistance of the resistor such that the first current substantially equals the second current, wherein said adjusting step comprises:

determining if the first current is greater than the second current; and

disconnecting the resistor.

46. (Canceled)

47. (Currently amended): The method of claim ~~[[45]]~~ 43, further comprising the step of adjusting the resistance of the resistor such that the first current substantially equals the second current, wherein said adjusting step comprises:

determining if the first current is greater than the second current;

disconnecting the resistor using a control signal; and

outputting the control signal as the digital code.

48. (Canceled)